

## Modern Type Concepts in Entomology

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**Abstract:** Twenty-six new type concepts are proposed to alleviate the barrenness of current type methodology. The proposed type concepts are commonly used and practiced but completely unrecognized in the scientific literature. The truth inherent in these new proposals will be patently evident and should be given due consideration in light of current systematic procedures.

The type concept serves as a standard of reference to tie taxonomic names to objectively recognizable taxa. The standards are the types and the types are only the specimens bearing the name of the taxon. A type is always nothing more than a zoological object. In this regard and for the sake of standardization in systematics in general, only three type concepts (holotype, lectotype, and neotype) currently are exercised in the type method. This standardization unfortunately has a certain sterility. Additional type concepts could alleviate such a situation and simultaneously do systematic science a real service.

These proposed type concepts and their use were hypothesized, distilled, crystallized, and recrystallized through creative deliberative debate with members of the Association of Minnesota Entomologists and several other distinguished entomologists. They were found to apply in one situation or another where no other concept seemed quite appropriate. With few exceptions, *all* these type concepts have been found to have a usefulness apparently unappreciated by the systematic entomologist. The reader should be aware that these proposals are an attempt at satirical humor on taxonomic entomology.

*Ambiguotype.* 1. A type specimen, usually a holotype, with inadequate date-locality labels. Classics are: "N. Amer.", "Northwest Territory", "my backyard", "Summer 69", "Highway 313", etc. 2. Also known in some circles as a type based on a "Walker description" or as a "Walker type".

*Artotype.* Type specimen of a new species with distinctive color patterns ultimately shown to be paint spots.

*Atypicotype.* Type specimen of a new species ultimately recognized as a color variant of a well known common species. Coleopterists familiar with the work of Casey are well acquainted with this type concept.

*Autotype.* Holotype collected from the grill or radiator of your car.

*Biasotype*. Type specimen of a species recognized as distinct by detailed statistical treatment involving a small sample size (one or two).

*Boobootype*. A holotype that should not have been described. In this case, a specialist fails to recognize his own earlier described species; the museum technician or the star graduate student does, however.

*Chromosomotype*. A type specimen of a new species known only from its chromosome smear because the remainder of the specimen was discarded.

*Collectotype*. The type specimen of a new species instantly recognized by an authority but in the personal collection of a collector who will not give it up under any circumstances.

*Constructotype*. A holotype (created during a taxonomic revision) due to a mix-up of body parts, such as male genitalia on a female body, etc.

*Curatotype*. This type category is retained for those specimens placed under the curator's stewardship which demonstrate a high degree of technical expertise: 1) the spiral staircase and the parking ramp space savers (Figs. 1 and 2); 2) the cheap pin trick in which the pin bends with every touch or slowly corrodes away (Fig. 3); 3) brittle glue trick (Fig. 4); 4) celluloid points with a special PDB twist (Fig. 5); 5) glop on a pin trick for when you run out of points (Fig. 6); 6) the soft-bodied bug trick-before and after (Fig. 7); 7) the tape and glass block trick used on lepidoptera to avoid examination with a microscope.

*Cryptotype*. A type described and published in something like *Turtox News*, *Ranger Rick*, a personal letter to mom, or a mimeograph mailed to your cronies.

*Dermestotype*. A holotype usually consisting of only a partial thorax and some attached legs topped by artifacts reminiscent of a dermestid orgy.

*Diplomatotype*. A type named for someone with whom the describer wishes to have a good rapport, ie. *Nationalsciencefoundationulus*, *NIHulus*, *Racquelwelchae*, etc.

*Dissectotype*. The type specimen of a species recognized to be new after you have dissected the beast entirely. Often the dissectotype can be cleverly converted to a Dermestotype.

*Hoaxotype*. A unique type, constructed of parts and pieces of several unrelated higher taxa (grasshopper head, beetle body, moth wings, etc.). This kind of specimen often appears on a practical exam where the instructor feels he has a sense of humor and the students do not.

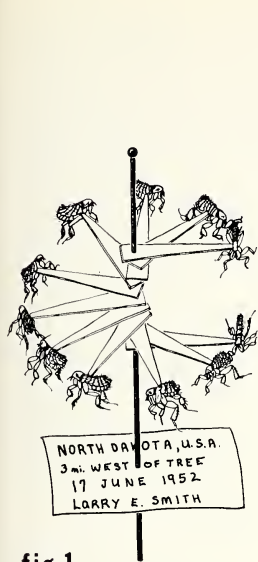


fig 1

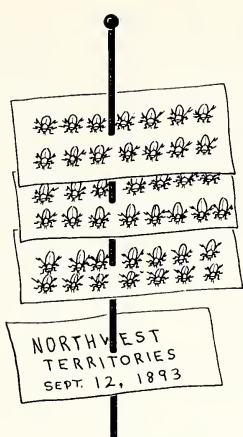


fig 2



fig 3

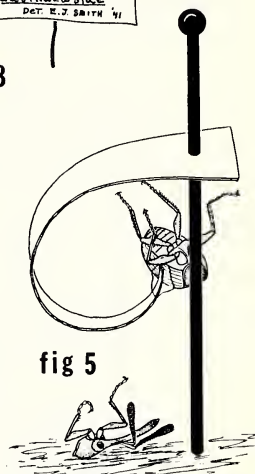


fig 5

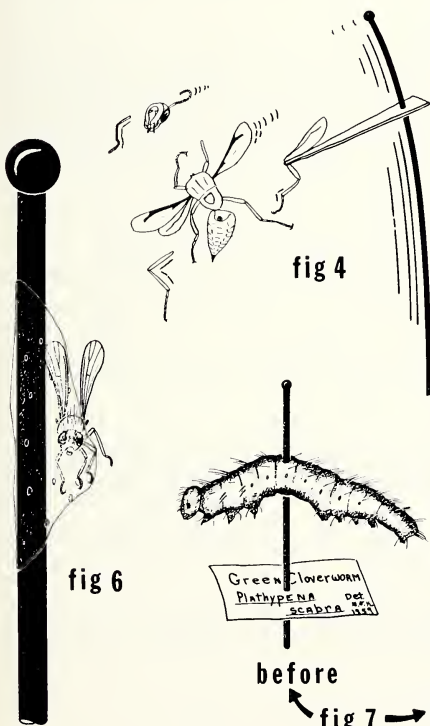


fig 6

fig 4

before  
fig 7 → after

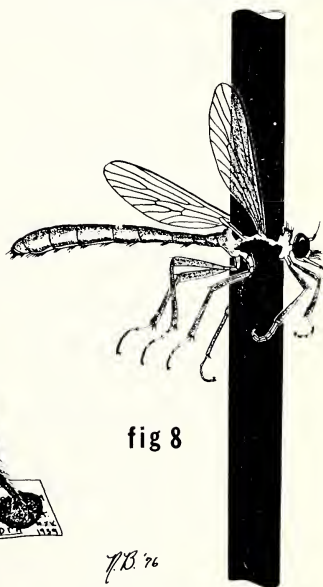


fig 8

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FIGS 1-8.

*Immaturetype*. This type category is for specimens of species with previously unknown larval or nymphal stages. There was considerable deliberative discussion concerning this particular type since a number of our peers felt there should be a breakdown into several categories more explicit in denoting the type of immature being considered. Type concepts such as larvotype, pupotype, maggototype, caterpillartype and nymphotype received considerable support. It was decided to retain Immaturetype however, when our most distinguished and literate colleague reduced the debate to irretrievable absurdity by demanding nymphotype be retained for a particularly fascinating female *Homo sapiens* of his close acquaintance.

*Incognitotype*. 1. The type specimen which is positively the holotype but has lost its identifying labels. 2. A type created when the holotype is deposited in a personal collection which ultimately disappears. 3. A holotype, presumed lost, which is needed for a major taxonomic revision.

*Kleptotype*. A type which has been stolen from its rightful place.

*Patronymotype*. A holotype in the personal collection of a collector who will relinquish it to a recognized authority if the new species is named after the collector and he gets to keep the holotype.

*Pornotype*. A type category frequently used in entomological circles (but never recognized in the scientific literature) in which systematic decisions are based predominately on extensive examination of genitalia. In some cases, it is difficult to ascertain whether pornotypy is a matter of personal taste or a necessary professional evil.

*Progressotype*. Holotype of a species (now probably extinct) whose original habitat was restricted to an area now known as Miami, Florida or San Francisco Bay, California.

*Publishotype*. Holotype described after rumors of staff reduction are circulated. Known in some circles as "boiling the pot."

*Solutotype*. A type created by dissolution in NaOH or KOH, usually while the author is momentarily engaged in a caffeinated discussion with several peers.

*Teletype*. A holotype whose description reads like a report of the New York Stock Exchange and has about as much usefulness.

*Tyrannotype*. Type designated by the International Commission on Zoological Nomenclature. Apparently a necessary evil.

*Vampirottype*. A type specimen created when an oversized insect pin is plunged thru an undersized insect. The result is a head on one side of the pin and a

partial abdomen on the other side connected by miscellaneous pieces of strained flesh. Named for its analogy to using wooden stakes to kill vampires (Fig. 8).

### *Corollary Scientific Terminology*

*Taxonomists Piece.* That anatomical structure (whose function is unknown) used by professionals to facilitate easy recognition of a particular taxon.

These type concepts were found to apply to scientific enigmas for which no other answer existed. In spite of the gravity of this point, and the scientific creativity involved in the writing and publication of scientific truths such as these, the authors want nothing whatever to do with this classic. This decision was arrived at after it was kindly demonstrated that democratic justice operates on the principle of "innocent until proven guilty" and also that any resemblance to current systematic or taxonomic research had better be purely coincidental. The apparent authors therefore stand accused of complicity only in publication, not necessarily authorship.

## BOOK REVIEW

**Mites Injurious to Economic Plants.** Lee R. Leppson, Hartford H. Keifer and Edward W. Baker. University of California Press. 614 pp. 42 original drawings and 80 photographs. \$???. 1975.

This book presents a readable, authoritative treatment of all available information on mites that cause injuries to economically important food and fiber plants, and to ornamentals. The distribution, biology, types of injury, chemical control, as well as keys for the identification of mites are included. Eight chapters provide an in depth description of mite biology. Five chapters are devoted to descriptions of mites that cause injuries to economic plants. The authors are renowned world authorities in different areas of acarology and the book will be of great value to research workers in entomology, as well as to students, teachers, county agents and experimental stations. The illustrations, including beautiful scanning electron micrographs, will be of special help to those interested in mite taxonomy. Unfortunately the proofreading of the book was done in a sloppy manner and the reader ought to be cautioned about the reliability of references and spelling. I will quote but a few examples picked at random. Slykhuis on p. 100 is also spelled, erroneously, as "Slykhius." The reference to his work on p. 102, quotes his article in "Smith, K. M. : Adv. in Virus Res. 11:97-137, Laufer, Academic Press, N. Y.-London." The reference should have been to "Advances in Virus Research edited by Smith, K. M. and Laufer. Max A." "Transmission of Agropyron mosaic virus. . ." should have read Agropyron mosaic virus. The sentence pertaining to mites as vectors of plant viruses on p. 94 is perplexing: "Mites belonging to the Eriophyoidea have been known since 1933 to transmit plant viruses (Amos et al, 1927). . ." How did Amos et al in 1927 know what would be known since 1933? In fact, the association of the current reversion disease with mites was known, but the causative virus was not linked with mites until many years later and reversion was considered due to mite injury. The important contribution of Slykhuis, who discovered that eriophyid mites transmit viruses, was not properly emphasized in this book.

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